

# Minimum residence time, biogeographical origin, and life cycle as determinants of the geographical extent of naturalized plants in continental Chile

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## ABSTRACT

The geographical extent of exotic plant species is a major component of invasiveness, which has been explained by intrinsic attributes of the plants, such as growth rate, reproductive type, life form, and biogeographical origin. We assessed quantitatively life cycle and biogeographical origin as determinants of the geographical distribution of naturalized plants in continental Chile, using minimum residence time (MRT) as an estimator of introduction date. We assembled a database with information on 428 plants (principally herbs) in continental Chile, corresponding to 61% of the exotic naturalized flora. For each species we recorded: (1) minimum residence time (introduction date or first recorded date in the country); (2) biogeographical origin (American, Eurasian, others); (3) life cycle (annual, perennial, others); (4) number of Chilean regions occupied by the plant. We found that 82 species (19%) have been recorded in only one region of Chile, while only three species have been found in all 13 regions of the country. About 89% of the species (381) have been found only in central Chile (Regions IV to VIII), while the remaining 11% (47) are found only in the northern (Regions I to III) or southern parts of the country (Regions IX to XII). We detected significant differences in regional spread of naturalized plants according to minimum residence time: those species with shorter MRT had more limited spread ranges than those with longer MRT. Biogeographical origin and life cycle did not explain geographical extent in Chile. This study shows that historical factors are more important than biological ones in determining the geographical extent of naturalized plants in continental Chile. Thus, caution should be exercised when assigning value to biological attributes that may confer invasiveness to naturalized plants.